Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Section 222.367(a)	)	RM-9387
Of the FCC's Rules	)	
	)	
Petition for Rule Making of Andrew	)	
Corporation	)	

COMMENTS OF GTE

GTE Service Corporation and its designated affiliated companies[1] (collectively, "GTE") respectfully submit the following comments in response to the above-captioned petition for rule making ("Petition") filed by Andrew Corporation. In the Petition, Andrew Corporation asks the Federal Communications Commission ("FCC" or "Commission") to amend Section 22.37(a)(4) of the FCC Rules to eliminate the requirement that licensees of cellular radiotelephone systems employ only base stations with vertical polarization.

1 These comments are filed on behalf of GTE's affiliated domestic telephone operating companies, GTE Wireless Incorporated, GTE Communications Corporation and GTE Media Ventures, Inc. GTE's domestic telephone operating companies are: GTE Alaska Incorporated, GTE Arkansas Incorporated, GTE California Incorporated, GTE Florida Incorporated, GTE Hawaiian Telephone Company Incorporated, The Micronesian Telecommunications Corporation, GTE Midwest Incorporated, GTE North Incorporated, GTE Northwest Incorporated, GTE South Incorporated, GTE Southwest Incorporated, Contel of Minnesota, Inc. and Contel of the South, Inc.

I. INTRODUCTION AND SUMMARY

Section 22.367(a)(4) provides that waves radiated by base, mobile and auxiliary test transmitters in the Cellular Radiotelephone Service must be vertically polarized.[2] Section 22.901(d)(2) exempts cellular systems utilizing digital technologies from the vertical polarization requirement. Moreover, nothing in the FCC's Rules prevents carriers from deploying non-vertically polarized receive antennas. Thus, the vertical polarization requirement is limited to analog transmit antennas.

In the Petition, Andrew Corporation states that circumstances have changed since the FCC adopted rules requiring base station transmit antennas to be vertically polarized. It argues that "it is now in the public's interest to permit cellular licensees to employ base station transmit antennas to employ any orientation of linear polarization, i.e., not exclusively vertical."[3]

GTE supports the Andrew Corporation Petition. GTE agrees that vertical polarization is not needed to reduce the probability of interference. GTE further believes that eliminating the vertical polarization requirement may reduce carrier antenna costs, allow for efficient use of scarce real estate suitable for antenna sites, foster more aesthetically pleasing antenna sites, and promote regulatory parity.

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[2] 47 C.F.R. § 22.367(a)(4).

[3] Petition at 2.

II. DISCUSSION

A. The vertical polarization requirement is not needed to reduce the probability of interference.

When the Commission last reviewed the vertical polarization requirement in the context its review of the Part 22 rules, it found, *inter alia*, that operating with cross polarizations would significantly reduce the interference between facilities using the same or adjacent spectrum for different purposes. Thus, the Commission suggested that requiring cellular licensees to use vertically polarized transmit antennas will reduce interference to horizontally polarized TV antennas.[4]

Andrew Corporation argues, however, that the scattering caused by obstacles in the mobile environment gives rise to substantial amounts of horizontally polarized energy. It argues, further, that since part of the spectrum closest to the frequency band assigned to cellular is assigned to land mobile and other commercial operations, the chance of interference to TV antennas is reduced. GTE concurs.

Moreover, GTE notes that significant isolation between cross polarizations does not occur until much higher frequencies such as in the 4 and 6 Ghz bands used for microwave communications. For this reason, in many microwave bands, adjacent channel assignments are required to operate with alternating polarizations to reduce adjacent channel interference. In the lower frequency cellular bands, however, the vertical polarization requirement does not significantly reduce interference between services on the same or adjacent band. Accordingly, the FCC's interference concerns

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[4] Amendment of Part 22 of the Commission's Rules, *Report and Order*, 9 FCC Rcd 6513, 6558 (1994) ("*Part 22 Rewrite Order*").

should not prevent the use of non-vertically polarized transmit antennas in the cellular service.

B. Eliminating the vertical polarization requirement will be cost effective.

The other reason given by the Commission in the *Part 22 Rewrite Order* for retaining the vertical polarization requirement was to encourage a common, cost-effective antenna design.[5] In today's market, however, there are 15–20 antenna vendors that sell antennas for use with cellular service. Thus, competition among these vendors can be relied upon to keep prices low. Assuming commonality of design played any role in keeping the carriers' antenna costs down, that requirement is no longer necessary.

Moreover, eliminating the vertical polarization requirement may actually reduce the number of antennas carriers must deploy at each site and thereby reduce carrier antenna costs. As Andrew Corporation indicates, a typical sector of a cellular network site requires three directional antennas -- one transmit and two receive. If, however, the Commission were to allow polarization diversity, the two vertically polarized receive antennas could be replaced by one dual polarized antenna. Furthermore, if a frequency duplexer is used to separate out transmit and receive bands, only one antenna would be required.[6] By eliminating the number of antennas required, the requested rule change could significantly reduce carrier antenna costs.

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[5] *Id.*

[6] Petition at 4-5.

C. Eliminating the vertical polarization requirement will reduce the space requirements for antennas and antenna sites and lead to more aesthetically pleasing antenna sites.

As discussed above, eliminating the vertical polarization requirement will allow cellular carriers to reduce the number of antennas at each cell site. As Andrew Corporation indicates, by reducing the number of antennas the overall diameter of the envelope enclosing the antennas can be reduced. As a result, carriers may be able to eliminate the need for the large triangular support structure currently used at the top of most cellular base stations.[7]

Reducing the overall size of the antenna envelope is important for a number of reasons. In addition to reducing carrier costs, the size reduction lightens the load on existing tower structures making it more likely that multiple carriers can mount antennas on existing towers. In an environment where prime antenna sites are at a premium, and communities want to minimize the number of towers constructed, the increased ability to share existing structures is vital to the public interest.[8]

In addition, by reducing the number of antennas and/or eliminating the triangular support structure, carriers will be able to construct more aesthetically pleasing cell sites. Thus, carriers may be able mount antennas in a manner less intrusive to the surrounding landscape thereby reducing public objection to tower sites. For example,

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[7] Petition at 5.

[8] In 1998 alone, GTE allowed competitors to collocate on approximately 113 of its existing towers. GTE is currently working with competitors to collocate at approximately 30 other sites. In many cases, 3 and 4 wireless competitors have collocated on GTE's existing sites.

GTE's PCS operations have deployed sites where the dual polarized antennas are enclosed within flagpoles. The ability to construct such unobtrusive cell sites clearly benefits both the carrier and the public.

D. The proposed change would promote regulatory parity.

As noted above, Section 22.901(d)(2) of the Commission's Rules exempts cellular systems utilizing digital technologies from the vertical polarization requirement.[9] Because the vertical polarization requirement applies selectively to cellular carriers with analog systems, its imposition represents a competitive advantage to newer, pure digital systems. GTE believes that the benefits that can be realized through polarization diversity should be afforded to the analog cellular industry as well.

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[9] 47 C.F.R. § 22.901(d)(2).

III. CONCLUSION

GTE believes that eliminating the Commission vertical polarization requirement is in the public interest. Vertical polarization is not needed to protect adjacent spectrum users from interference or to control carrier antenna costs. Indeed, allowing polarization diversity will serve the public interest by reducing carrier antenna costs and enabling carriers to deploy more aesthetically pleasing antenna sites.

Dated: December 3, 1998

Respectfully submitted,
GTE Service Corporation and its affiliated domestic telephone, wireless and long distance companies

John F. Raposa
GTE Service Corporation
600 Hidden Ridge, HQE03J27
P.O. Box 152092
Irving, TX 75015-2092
(972) 718-6969

By Andre J. Lachance

Andre J Lachance
GTE Service Corporation
1850 M Street, N.W.
Washington, DC 20036
(202) 463-5276

Their Attorneys

CERTIFICATE OF SERVICE

I, Judy R. Quinlan, hereby certify that copies of the foregoing "Comments of GTE" have been mailed by first class United States mail, postage prepaid, on December 3, 1998 to the party listed below:

Russell H. Fox, Esq.
Gardner, Carton & Douglas
1301 K Street, NW
Suite 900, East Tower
Washington, DC 20005

Judy R. Quinlan